

# Self-Discipline Through Social-Responsibility

**Towards developing a dual methodology for temporalising multi-reflexivity in school and university research**

## Abstract (243)

This Confirmation Report presents a methodological thesis which aims to help reduce the practice-theory gap. The social dynamics within secondary school classrooms are complex. The fragmented knowledge of academia is complicated. Combined, these constitute a 'wicked system' (Andersson 2014, 2018). Systemic problems arise with inter-disciplinarity and the silo problem within academia, and in schools a persistence of institutional discipline amid pernicious 'low-level disruption', and between them the increased practice-theory gap because of replication and transference challenges. The problem space is understood as dense reflexive-active environments (Lepskiy 2018b, 2018a, 2015), a formulation of third order cybernetics, and specific and practical interventions are proposed for both schools and academia. In schools, students conduct an intervention to improve social cohesion, 'ABC State', based on action-learning (Riel 2010-2020), a variation of participatory action-research (Chevalier & Buckles 2008). Meanwhile academics are invited to conduct an intervention which enables verification, 'Reflexive Reading', based on temporal correspondence (Roth 2020, 2018) and 'before-the-fact' systemic practice (Shotter 2017, 2009), a concretisation of indivisible event phenomenologists (Whitehead 1919, James 1907, Bakhtin 1993). Collective social states are self-evaluated and self-generated against a spectrum of self-organisation; since results can not be generalised as laws (positivist meta-theory) nor transferred from one context to another (interpretivist meta-theory), a generative mechanism is described (transcendent dialectic critical realist meta-theory). This Report presents how the 'Dual System' methodology requires two years to conduct research in schools and consolidate the theoretical basis for 'Reflexive Reading'. Preparations for generating a mathematical model of this process are explored.

## Introduction (3k4)

### Background

Teachers face a *complex* psycho-social dynamic in every lesson, often exhibited as indiscipline and 'low-level disruption'. Though a discipline policy can be well-defined, a culture of implementation relies on ill-defined 'soft-skills' to foster positive relationships and motivate students. This Confirmation Report explores an innovative information-systems mechanism by which students and teachers evaluate the state of social self-organisation in order to improve their social cohesion. Whatever the results from school, the *complicated* structure of fragmented knowledge across specialised disciplines, poses problems of replication, transference and practitioner adoption. Anticipating these problems, the author invites academics to consider a hermeneutic intervention during the experience of reading in order to reduce the practice-theory divide. This approach constitutes a 'Dual Systems Methodology'.

Andersson understands systems which combine complex and complicated as 'wicked' (Andersson 2014, 2018) and require theoretical narratives until computational methods are derived. But this only deals with one aspect of the problem. The term 'wicked' was attributed as the moral value of proposing a partial solution to a complex problem (Churchman 1967). Underlying this is the experience of reflexivity; how each of us decides how to comport ourselves (our praxis), given the institutional directives operating upon us and whatever constitutes our 'internal compass'. I follow the understanding that educational research conducted in a reflexive manner means ethics is continuous embodied praxis, requiring communicative innovation, and holds all participants accountable for their actions (Hwang 2005). Ethical conduct applies to students in secondary school as it does to my research colleagues at university. Our hope is that by stabilising reflexivity within the dense reflexive environments of school and academia, we contribute towards whole system stabilisation, a goal Luhmann was already skeptical of in 1982:

There are remarkable advances that are changing the outlook of systems theory in this direction. However, these are developments within subsystems of subsystems of a subsystem of world society. It is difficult to see how they could become a common language for the process of societal self-observation. Furthermore, systems theory, itself struggling to surmount the prevailing predispositions of the European tradition, is becoming more *complex* (and not simply more *complicated* in terms of models or variables). Evaluation and even understanding becomes difficult. Finally, there are no solutions for the most urgent problems but only restatements without promising perspectives. Taking all this into account, success seems to be highly improbable. (Luhmann 1982, p.137, my italics)

Our approach to the 'wicked' problematique does not require a philosophical treatise; we will build on the underlabour of Critical Realism (Bhaskar 1998, 2000) and be guided by Shotter's 'before-the-fact' systemic relationality (Shotter 1983, 2016). Knowledge can lead us only so far; transformative praxis requires wisdom and action. Situated within Information Systems, we shall examine the political dimensionality of the DIKW construct

(Kitchin 2014; Foucault 1981) to transform ‘information-as-knowledge’ -- the ‘weak knowledge’ of transmitted signals or words -- into ‘information-as-action’ (Banathy 1996; Konorski 1962). We shall explore the generative mechanisms which transform ‘flows of information’ into ‘warm data’ by communities of practitioners (Bateson 2015; Ruppert 2012; Giteman & Jackson 2013; Bowker & Star 1999; Cae & Wenger 1991), where data itself works on the participants (Ribes and Jackson 2013; Star and Ruhleder 1996). Our aim is to design complementary methodologies or interventions for both students in school and readers at university, a ‘Dual Systems Methodology’. It is the Thesis of this PhD that the means of stabilising a reflexive practice in Information Systems, and social science more generally, relies on exercising what Bhaskar terms the ‘intentional embodied causally efficacious agency’ (Bhaskar [1993] 2008. D, p.277). Specifically, the transformative causal power of subjective verification. Our reading, as social scientists, matters.

## State of the Problem

In 2019, academic achievement across all GCSE subjects in England at Level 4+ / Grade C was 67.1%, while achieving Maths and English at Grade 5+ was 43.2% (DoE 2019); another way of looking at it, the educational system is running at between 32.9% to 56.8% ‘failure’ or ‘inefficiency’. Such results are rooted in the double problem of discipline: the systemic need for discipline in schools, and the fragmented knowledge of disciplines in academia (which we shall see includes the misapplication of mathematics to social behaviours).

### *School Discipline & Social Learning*

Discipline remains an issue in secondary school education. Ofsted’s ‘Below the Radar’ (2014) reports that “pupils are potentially losing up to an hour of learning each day... because of disruption in classrooms” (p.4). Chatting, calling out or reluctance to start work, known as ‘low-level disruption’, have detrimental effect on student learning (Swinson 2010), impoverish student-teacher relationships (Dursley & Betts 2015), and contribute to professional erosion (DoE 2017; Stefaniak et al 2019; Osher 2010). To counter indiscipline, Discipline Policies provide proactive rules (‘expectations’) and reactive procedures (‘consequences’) (Mayer 1995; Gottfredson et al 2005; Skiba et al 1997) by which teachers are authorised to execute reasonable sanctions as dictated by government (Education and Inspections Act 2006, Section 91), though some teachers are wary that disciplining may inhibit positive intentional contributions (Payne 2015 p.499) resulting in unmotivated students (Baird et al. 2010, p.155) thus compounding the low-level disruption problem.

A sentiment common to teacher training (which I myself experienced) is that the best way to deal with discipline is to create engaging lessons (Jackson, 2011; Deans for Impact, 2016; Rogers 2002; Carter 2015). There has been considerable efforts in instituting the Social and Emotional Learning (SEL) agenda (Smith 2007), as well adopting soft-skills to help soften the hierarchy (Hill 2019; Christis 2005) in order to humanise education (Miller 2016). Although Durlak’s meta-analysis reported a general positive effect of SEL (Durlak 2011), direct teaching of SEL skills has been shown to be ineffective with adolescents (Yeager 2017). Despite these influences, the factors which constitute the deep structure of education appear to persist (Tye 1998). Regardless of the evidence supporting collaborative learning (Johnson & Johnson 1999; Slavin et al. 2007; Le et al 2018; Martin

2009; Mercer 2019, 2013), students appear locked in 'performative mode' rather than 'cooperative mode' (Howe 2010).

### *Academic Disciplines & Impact*

The academic landscape is fragmented. Two million articles are published a year by more than 7.8 million researchers (according to Unesco 2013). Disciplines cultivate a 'community of arguers' who share language and systematic enquiry (Bridges 2006), but academia has undergone a process of hyper-specialisation; at the time of writing, Scopus lists 38,060 Journals in total, more than the 30,000 journals reported by STM 2018 (Johnson et al 2018): 1,537 in Education Psychology and Education, 1,351 Education, 209 Organisational Behaviour, etc. Provision to help educational practitioners adopt research are numerous (eg Haslam & Shaw 2019), with specific guidance for starting teachers to take up an evidence-informed practice (Rose & Eriksson-Lee 2017; Lyon et al 2019; Brown 1992). This provision betrays the existence of the practice-theory divide: how the rich practice of teaching is all-consuming which contrasts with the 'thin description' of learning theory and teacher training advice (O'Leary et al 2014; McGarr 2017).

The problem of research may be described as the 'invisible subject' (Roth 2018): how the actual lived-in experience of students is represented, objectified, transcribed into text and 'the researcher no longer lives with human beings but thinks about them by taking the transcription as the object of inquiry' (ibid. p.320). The explication and externalisation of knowledge is a necessarily multiplicative act (Bateson 1979, p.64, p.67) given that much of social dynamics (whether in classrooms or academia) goes unnoticed; 'We recognise one another as community participants initially in a pre-reflective way through our enrolment in existing communities and their collective practices premised on unnoticed attitudes and expectations' (Pratten 2017, p.1427). Subsequent reification of relations through nominalisation ('expectations', 'discipline', 'intelligence') or substantivisation ('students learn') or 'textual coding' (Saldaña 2015) derive a 'cognitive complexity' (Warfield 1994, 2004) and 'complex polysmemy' (Harbour & Gauthier 2017) which 'create artificial problem-situations' (Shotter 2017, p.52). Returning to practitioners, to paraphrase Ackoff, '[teachers] do not solve problems; they manage messes' (Ackoff 1979, p.99).

### *The Core Problem: Temporal Multi-Reflexivity*

Underlying the complexity and complicatedness of both systems is reflexivity: 'Acknowledgement of one's own participation in unitary Being-as-event, and this fact cannot be adequately expressed in theoretical terms, but can only be described and participately experienced' (Bakhtin 1993, p40). A variety of approaches have been attempted, a selection of which are explored. Psycho-therapy rooted to Freud and Jung, further developed through Bateson and Mead into family therapy, gestalt, constellation therapy, and most recently reflexive systems practitioners (Simon & Chard 2010; Shotter 2017). The evolution of system theory (von Bertalanffy 1973) and Cybernetics (Weiner 1948), second order cybernetics (von Foerster 1995), and multiple versions of third order cybernetics (Lepskiy 2015; Novikov 2016, Mancilla 2013). The long history of 'process philosophers' of James (1907), Whitehead (1919), Dewey (1934), and the phenomenologists Bakhtin (1973), Shotter (2017), Rogoff (2016), Roth (2020). Extreme

epistemic frameworks such as intersubjective science (Velmans 1999), subject-orientated approach (Kjellman 2002) and radical constructivism (von Glaserfeld 2001). The structure-agency problem perhaps best exemplified by Bourdieu (1990) and Archer (2010), and Giddens' structuration theory (1984), paralleled by the century long argument of nature-nurture. The end-point of postmodernism drawing in psychotherapy (Lacan), semiotics (Barthes, Ricour), literature (Derrida, Rajan 1990), mathematics (Lakoff & Nunes), sociology (Bourdieu, Luhmann), philosophy (Deleuze & Guattari). And in methods, the emergence of Grounded Theory (Glaser & Strauss 1967; Charmaz 2006; Corbin & Strauss 2008) and action-research (Lewin 1958; Riel 2019), and social ontologies such as Critical Realism (Bhaskar 1998, 2000, 2008). And finally, the complexity and complicatedness of polysemic language (Harbour 2019), models and explanations (Warfield 2004; Kostich 2019; and the medium of writing to 'convey' our observations on human nature (Ricoeur 1984). On all accounts, to adopt a mathematical phrase, reflexivity is not 'well behaved'.

Merging the problem space of 'discipline' (both in terms of behavior and academic discipline), the reasons for the gaps in the literature are sixfold. First, research is hyper-specialised and fragmented. Second, practitioners in education are fully occupied with the complex demands of their job. Third, interventions or 'solutions' are primarily delivered through the teacher rather than through the collective of students themselves. Fourth, the social drive is treated as pathological, stigmatising the reflexive individual, and inductively recreating the 'discipline system' in school and specialisation in academia. Fifth, whether through quantitative or qualitative methodologies, participants become invisible subjects (Roth 2018) and reduced to thin descriptions (Shotter 2017) rather than acknowledged as fully embodied, emotive, cognitive and social participants (eg Barsalou 2008). Sixth, the methodologies evolved for science and the study of objects are overly cumbersome and unsuitable for operating within dense self-developing environments.

In this thesis we shall come to show that, despite post-positivist and interpretivist strains, the methodologies of social-science remain steadfast in a positivist frame (Pickard 2013; cf. Saunders 2007). The challenge to reflexivity is in timing, and we turn to a close reading of a range of texts taken from different disciplines to triangulate the issue: Ricoeur's theory of mimesis, specifically "it is in the hearer or the reader that the traversal of mimesis reaches its fulfilment" (Ricour 1984, p.71); Gadamer's 'fusion of horizon' (1975); the problem that 'the researcher no longer lives with human beings but thinks about them taking the transcription as the object of inquiry' (Roth 2018, p320); collective leadership (Jian 2019); time-perspective (Mello 2019); the difference between abduction and retroduction (Pierce, von Glaserfeld, Bhaskar); and "no matter how good or complex we think our theories representing them may be... Our coming [to] know what is uniquely 'there' before us, in a way that orients us bodily toward it, is an orientational or relational difficulty, not an intellectual one" (Shotter 2009, p.239). In short, we explore how the sensitivity developed in therapeutic practices and fractional discourse analysis which focusses on mostly dyadic relations (Shotter and Roth) can be applied to the complexity of multi-reflexive environments.

## Aims & Objectives

It is a position taken in this Thesis that the discipline policy of ‘expectation-consequence’ is an over-simplified solution to a complex problem. The underlying cause of low-level disruption is that young people are trying to engage socially (chatting, calling out), which is inherently a complex phenomenon. We propose to reframe low-level disruption as participatory action research *conducted badly*, and provide a framework/methodology/intervention for students to self-organise social cohesion and thereby redefine the role of teacher as learning-facilitator. However, the underlying systemic processes which maintain traditional schooling methods exist at many levels of social organisation, which include research and academic institutions. Hence, we aim to take the advice of Shotter: “we academics should undertake an ‘imaginative hermeneutical exploration’ as an institutional professional practice” (Shotter 2017, p.52). We are thus led to the necessity of proposing an intervention to stabilise the reflexive condition in academic reading.

In both interventions, we aim to enfold the reflexive aspect of complexity, both in classes and in academic discourse. This constitutes what we shall call a ‘Dual System Methodology’, a formalisation which shares its roots with ‘dual lens research’ in anthropology (Robertson 2017). The two interventions aim to enact transformational praxis: the social dynamics in synchronous engagement (specifically students in secondary school, our ‘object-system’), and the social dynamics across asynchronous engagement (specifically academics reading this paper, our ‘subject-system’). The first aims to help students interact in a self-organised way to realise untapped relational potential (Howe 2010), the latter a mechanism of verification which stabilises the reflexive condition in academic reading (Simon 2012). Our objective is to show that time-orientation is the critical factor in social cohesion in schools and academic research. By becoming sensitive to temporal multi-reflexivity, we enable practices which are not reductive, representational or decontextualising.

Further, experiential correspondence between participants in a class and participants conducting research may help in reducing the theory-practice gap. Just as student self-organisation may shift the teacher role from disciplinarian to facilitator, so reader self-organisation may shift the researcher role from executor to invitee of research.

The intention behind conducting this research is to help resolve the discipline problems in both systems (school and university). The potential impact of this research is for 1) individual teacher or whole school adoption of intervention, or new role of ‘classroom coordinator’ who specialises in facilitating social cohesion, 2) researcher adoption of dual system methodology to reduce practice-theory divide because of the invitational bridge between object and subject systems, and 3) further exploration of the underlying mathematics which support the dual system methodology. We shall set out provisional exploration for mathematical modelling, in order to simplify the complex language-based argument that takes up so much of this thesis.

## Research Questions

In terms of the object-system: how does the school intervention ('ABC State') enable self-organisation and social cohesion? Is the formative assessment of the intervention ('ABC State') a useful indicator of social cohesion?

In terms of the subject-system: how does the academic intervention ('reflexive reading') enable verification? And can the intervention ('reflexive reading') help researchers understand social experience of students in classes?

Postulates and hypothesis are presented below in order to highlight specific points which may be lost in the terse argument required to support them.

### School Intervention: **ABC State**

Postulate 1: Social cohesion can be empirically evaluated as a formative assessment in classrooms.

- Hypothesis 1a: Social cohesion has negative correlation to number of discipline issues.
- Hypothesis 1b: Increased social cohesion has negative correlation to number of incidences of low-level disruption.
- Hypothesis 1c: Social cohesion has positive correlation to improved wellbeing in students and teachers.
- Hypothesis 1d: Social cohesion has positive correlation to improved academic performance by students.
- Hypothesis 1e: Social cohesion has positive correlation to academic achievement.

### Quasi-Experiment: **Time Orientation** & Sociogram

Postulate 2: Time Orientation can be accurately determined from questionnaire.

- Hypothesis 2a: students have a predominantly future-orientated time perspective.
- Hypothesis 2b: teachers have a predominantly past-orientated time perspective.
- Hypothesis 2c: increased social cohesion correlates with matched time perspectives of students and teacher.
- Hypothesis 2d: researchers have a predominantly past-orientated time perspective.

### Academic Intervention: **Reflexive Reading**

Postulate 3: Reflexive reading conjoins the moment of reading and writing in a future-orientated way.

- Hypothesis 3a: Readers who verify the truth of reflexive reading (P3) may appreciate the dual research method, structure of the intervention, and the qualitative comments derived by students.
- Hypothesis 3b: Readers who verify the truth of reflexive reading (P3) share the method with colleagues.

Postulate 4: Sharing organically increases the readership, increasing reflexive density of the research.

Postulate 5: The numerics of organic sharing (financial, rating, commentary) constitute an alternative economic and accountability for knowledge sharing.

- Hypothesis 5a: The research finds audience who wish to adopt Intervention in schools; this enables non-generalised and non-transference or generative distribution; this is equivalent to 'impact'.
- Hypothesis 5b: The dual research method finds an audience who wish to adopt the dual research method of reflexive-reading.
- Hypothesis 5c: The research finds audience who wish to adopt the economic to distribute and track their own research.

## Structure of Report

The Literature Review presents and explains the selection of key areas and current knowledge, the gaps in the literature, and the theoretical frameworks adopted, their history, and the rationale for adapting them. The literature review is split into two sections: a delineation of the problem-space (behavior-discipline in secondary schools and knowledge-disciplines in academia), and a review of properties of wicked problems (complex, complicated, partial, reflexive, collective). The salient points of Bhaskar's MELD meta-theory (temporalised realism, absence and negative, relational totality, transformative praxis) will be described because it provides the underlabour for the design methodology: it helps us render a robust interpretation of Action Research for the school intervention, and encourages us to formulate and apply a concentrated Systemic Inquiry technique for the academic intervention.

The Design Methodology describes the epistemological and ontological positions which support the research design, how data will be collected and analysed, and why the research method has been chosen for ethical reasons. A new constellation of the previously described 'jigsaw pieces' is assembled which generate two self-contained interventions, operational in schools and university research respectively. The research design is described clearly as a quasi-experiment from the position of the subject-system (researchers in university): the use of questionnaires, event diary and collection of behaviour, assessment and academic achievement data (from the object-system), and the analytic methods to correlate quantitative and qualitative evidence to provide conclusions. The same design is described in the modality of reflexively embodied participants within their unique contextual conditions of school (primary-system) and university (secondary-system). The ethical considerations for electing to develop this 'Dual System' methodology is made clear, as is the moral responsibility of all participants.

A detailed plan delineates key milestones and deliverables modified because of the uncertainty caused by Coronavirus disruption to school calendars, followed by the researcher's DDP Progress, and culminating with a Conclusion and prospective follow-on studies. Appendices contain subject-system admin (ethics, data management plan, gantt chart), as well as additional appendices on object-system materials (initial email contact,

proposals to schools, questionnaires, material for teachers regarding ABC State intervention) and subject-system intervention (reflexive reading, provisional mathematical modelling).

(Please note, because of the wicked problem within which we are manouvering and its multi-scalar and changeable positionality (cf Deleuze & Guattari 1987), multiple arguments and conceptual lenses will be contrasted. The reader will be able to contrast 'hard-edged' evidence against subjectively sensitive accounts, such as with time-perception (eg Mello 2019, 2016, 2013) and reflexive systems practitioners (eg Shotter 2017), and Bhaskar's ontological real-actual-epistemic domains against Deleuze & Guattari's dynamic virtual-actual assemblies. The attraction of a more 'fixed' account is shown to be a simplification of a complex phenomenon, the *temporality of multi-reflexivity*. This alternative approach is required to avoid both literary reflexive complexity (postmodernism) and increased complicatedness of 'simplified' models (current quasi-science practices). Although the Dual Methodology may avoid the excesses of postmodernism and quasi-science practice, the review can not avoid appearing complex and complicated, given the current institutional practices which attempt to establish trustworthiness (credibility, dependability, transferability) outwith an organic social accountability, and academic rigour (internal and external validity, reliability, objectivity) outwith stable reflexive sensitivity. This problematic situation sets up the interventions introduced in the methodology, and the need for 'Reflexive Reading' as part of the academic process. This has led to the writing of an alternative Report, Confirming Review, which begins with Reflexive Reading and subsequently assumes its adoption by the reader. At the time of writing this [two months before submission deadline], the writer has no idea if he will have time to complete it; such is the nature of 'before-the-fact' methodologies.)

## Bibliography

- Ackoff, R. L. (1979). The future of operational research is past. *Journal of the Operational Research Society*, 30(2), 93–104. <https://doi.org/10.1057/jors.1979.22>
- Andersson, C., Törnberg, A., & Törnberg, P. (2014). Societal systems - Complex or worse? *Futures*, 63, 145–157. <https://doi.org/10.1016/j.futures.2014.07.003>
- Andersson, C., & Törnberg, P. (2018). Wickedness and the anatomy of complexity. *Futures*. <https://doi.org/10.1016/j.futures.2017.11.001>
- Baird, J.-A., Elwood, J., Duffy, G., Feiler, A., O'boyle, A., Rose, J., ... Mcwhirter, A. (2010). 14-19 Centre Research Study: educational reform in schools and colleges in England Centre Research Study Annual Report.
- Bakhtin, M. M. (1981). *Dialogical imagination*. Austin: University of Texas Press.
- Bakhtin, M. M. (1991). *The dialogic imagination: Four essays by M. M. Bakhtin (C. Emerson & M. Holquist, Trans.)*. Austin, TX: University of Texas Press.
- Bakhtin, M. M. (1993). *Toward a philosophy of the act (V. Liapunov, Trans. 1st ed.)*. Austin: University of Texas Press.
- Bateson, G. 1979. *Mind in Nature: a Necessary Unity*. London: Fontana/Collins.
- Bateson, G. (1972). *Steps to an ecology of mind: Collected essays in anthropology, psychiatry, evolution, and epistemology*. San Francisco: Chandler Pub.
- Bateson, G., Jackson, D. D., Haley, J. & Weakland, J., (1956). Toward a theory of schizophrenia. *Behavioral Science*, Vol. 1, 251–264
- Bateson, N. (2015). Symmathesy - A word in progress: Proposing a new word that refers to living systems. *Proceedings of the 59th Annual Meeting of the International Society for the Systems Sciences*.
- Bhaskar, R. (1998). *The possibility of naturalism: A philosophical critique of the contemporary human sciences (3rd ed.)*. London: Routledge.
- Bhaskar, R. (2000). *From East to West*. Retrieved November 11, 2019, from <https://ebookcentral.proquest.com/lib/sheffield/reader.action?docID=169319>
- Bhaskar, R. (2008). *A realist theory of science*. London: Routledge.
- Bhaskar, R., Danermark, B., & Price, L. (2018). Critical realism and social science. In *Interdisciplinarity and Wellbeing*. <https://doi.org/10.4324/9781315177298-5>
- Bridges, D. (2006, May). The disciplines and discipline of educational research. *Journal of Philosophy of Education*, Vol. 40, pp. 259–272. <https://doi.org/10.1111/j.1467-9752.2006.00503.x>
- Brouwer, L.E.J.: 1952, 'Historical Background, Principles and Methods of Intuition-ism', *South African Journal of Science* 49, 139–146. Reprinted in (Brouwer 1975), pp. 508–515.
- Brown, A. L. (1992). Design Experiments: Theoretical and Methodological Challenges in Creating Complex Interventions in Classroom Settings. *Journal of the Learning Sciences*, 2(2), 141–178. [https://doi.org/10.1207/s15327809jls0202\\_2](https://doi.org/10.1207/s15327809jls0202_2)
- Callaghan, K. A. (1998). Luhmann, N. *Social Systems*. *Human Studies*, 21(2), 227–234. <https://doi.org/10.1023/a:1005380109063>
- Carter, A. (2015). Carter Review of initial teacher training (ITT). (January), 81. Retrieved from <https://www.gov.uk/government/publications/carter-review-of-initial-teacher-training>
- Chevalier, Jacques M., and Daniel J. Buckles. *SAS2 : A Guide to Collaborative Inquiry and Social Engagement*, International Development Research Centre, 2008. ProQuest Ebook Central, <https://ebookcentral.proquest.com/lib/sheffield/detail.action?docID=407915>.
- Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. London: Sage Publications.
- Christis, J. (2005). Theory and practice of soft systems methodology: A performative contradiction? *Systems Research and Behavioral Science*, 22(1), 11–26. <https://doi.org/10.1002/sres.551>

- Churchman, C. W. (1967). Wicked Problems. *Management Science*, 14(4), 141–143. Retrieved from <http://media.proquest.com.proxy.library.lincoln.ac.uk/media/pq/classic/doc/2282529241/fmt/pi/rep/NONE?hl=&cit:auth=Harwood,+S+A&cit:title=Mixing+methodologies+and+paradigmatic+commensurability&cit:pub=The+Journal+of+the+Operational+Research+Society&cit:vo>
- Corbin, J. M., & Strauss, A. L. (2008). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. London: Sage Publications.
- Dalton, C. (2014). Beyond description to pattern: The contribution of Batesonian epistemology to critical realist research. *Journal of Critical Realism*, 13(2), 163–182. <https://doi.org/10.1179/1476743014Z.00000000022>
- Deans for Impact. (2016). *Practice with Purpose: The Emerging Science of Teacher Expertise*. Retrieved from [www.deansforimpact.org/WITHPURPOSE](http://www.deansforimpact.org/WITHPURPOSE)
- Deleuze, Gilles, and Félix Guattari. 1987. *A thousand plateaus: capitalism and schizophrenia*. Minneapolis: University of Minnesota Press.
- Dewey, J. (1929). *Experience and nature*. London: George Allen & Unwin.
- DoE. (2019). ( revised ) Latest headline data for pupils at the end of key stage 4 The gap between disadvantaged pupils and all other pupils remains broadly stable. 2019, 1–17.
- DoE. (2017). Analysis of school and teacher level factors relating to teacher supply. (September).
- Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The Impact of Enhancing Students' Social and Emotional Learning: A Meta-Analysis of School-Based Universal Interventions. *Child Development*, 82(1), 405–432. <https://doi.org/10.1111/j.1467-8624.2010.01564.x>
- Dursley, L., & Betts, L. (2015). Exploring children's perceptions of the perceived seriousness of disruptive classroom behaviours. *Educational Psychology*, 35(4), 416–429. <https://doi.org/10.1080/01443410.2014.907556>
- Gadamer, H. (1975). *Truth and method*. (D. Frank, Trans.). New York: Seabury Press.
- Giddens, A., *Social Theory and Modern Sociology* (Cambridge: Polity Press, 1987), pp. 20–21.
- Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. London: Aldine Transaction.
- Gottfredson, G., Gottfredson, D., Payne, A., & Gottfredson, N. (2005). School climate predictors of school disorder: Results from a national study of delinquency prevention in schools. *Journal of Research in Crime and Delinquency*, 42, 412–444.
- Harbour, M., & Gauthier, J.-B. (2017). Complex polysemy and reflexivity in organizational research. (July). <https://doi.org/10.13140/RG.2.2.25401.06242>
- Haslam, J., & Shaw, A. (2019). *Engaging with evidence guide*. Retrieved from <https://pixabay.com/>
- Hill, S. (2019). Softening the hierarchy: the role of student agency in building learning organisations. *Journal of Professional Capital and Community*, 4(2), 147–162. <https://doi.org/10.1108/JPCC-07-2018-0019>
- Howe, C. (2010). *Peer Groups and Children's Development*. Retrieved from <https://books.google.co.uk/books?id=pWfolKAfWusC&printsec=frontcover&dq=peer+groups+and+children%27s+development&hl=en&sa=X&ved=0ahUKEwjO0qntwo3mAhUQTBUIHeldDTMQ6AEIMDAB#v=onepage&q=peer+groups+and+children's+development&f=false>
- Hui, J., Cashman, T., & Deacon, T. (2008). Bateson's Method: Double Description. What is It? How Does It Work? What Do We Learn? 77–92. [https://doi.org/10.1007/978-1-4020-6706-8\\_6](https://doi.org/10.1007/978-1-4020-6706-8_6)
- Hwang, S. W., & Roth, W. M. (2005). Ethics in research on learning: Dialectics of praxis and praxeology. *Forum Qualitative Sozialforschung*, 6(1). <https://doi.org/10.17169/fqs-6.1.529>

- Jackson, R. R. (2011). How to Plan Rigorous Instruction. *Mastering the Principles of Great Teaching Series* (pp. 1–124). pp. 1–124.
- James, W. (1907). *Pragmatism: A new name for some old ways of thinking*. New York: Longmans, Green.
- Johnson, D. W., & Johnson, R. T. (1999). *Learning Together and Alone: cooperative, competitive, and individualistic learning*. Boston, MA: Allyn & Bacon.
- Johnson, R., Mabe, A., & Mabe, M. (2018). The STM report: an overview of scientific and scholarly publishing: 1968-2018, celebrating the 50th anniversary of STM. (October), 212. Retrieved from [https://www.stm-assoc.org/2018\\_10\\_04\\_STM\\_Report\\_2018.pdf](https://www.stm-assoc.org/2018_10_04_STM_Report_2018.pdf)
- Kjellman, A. (2002). The Subject-oriented Approach to Knowledge and the Role of Human Consciousness. *International Review of Sociology*, 12(2), 223–247. <https://doi.org/10.1080/0390670022000012468>
- Le, H., Janssen, J., & Wubbels, T. (2018). Collaborative learning practices: teacher and student perceived obstacles to effective student collaboration. *Cambridge Journal of Education*, 48(1), 103–122. <https://doi.org/10.1080/0305764X.2016.1259389>
- Lennox, R., & Jurdi-Hage, R. (2017). Beyond the empirical and the discursive: The methodological implications of critical realism for street harassment research. *Women's Studies International Forum*, 60, 28–38. <https://doi.org/10.1016/j.wsif.2016.11.010>
- Lepskiy, V. (2015). ECONOMIC CYBERNETICS OF THE SELF-DEVELOPING ENVIRONMENTS (THE THIRD ORDER CYBERNETICS). *Управленческие Науки*, Vol 5, Iss 4, Pp 22-33 (2015) VO - 5, (4), 22. <https://doi.org/10.26794/2304-022X-2015--4-22-33>
- Lepskiy, V. (2018a). Decision Support Ontologies in Self-Developing Reflexive-Active Environments. *IFAC-PapersOnLine*, 51(30), 504–509. <https://doi.org/10.1016/j.ifacol.2018.11.276>
- Lepskiy, V. (2018b). Evolution of cybernetics: philosophical and methodological analysis. *Kybernetes*, 47(2), 249–261. <https://doi.org/10.1108/K-03-2017-0120>
- Levy, S. S. (1986). The Principle of Double Effect. *The Journal of Value Inquiry*, 20, 29–40. <https://doi.org/10.1017/CBO9781107415324.004>
- Lewin, K. (1958), *Group Decision and Social Change*, Holt, Rinehart and Winston, New York, NY, p. 201
- Luhmann, N. (1982). The world society as a social system. *International Journal of General Systems*, 8(3), 131–138. <https://doi.org/10.1080/03081078208547442>
- Lyon, A. R., Cook, C. R., Locke, J., Davis, C., Powell, B. J., & Waltz, T. J. (2019). Importance and feasibility of an adapted set of implementation strategies in schools. *Journal of School Psychology*, 76(June 2018), 66–77. <https://doi.org/10.1016/j.jsp.2019.07.014>
- Mancilla, R. G. (2013). Introduction to Sociocybernetics (Part 1): Third order cybernetics and a basic framework for society. *Journal of Sociocybernetics*, 9(1/2), 35–56. [https://doi.org/10.26754/ojs\\_jos/jos.20111/2623](https://doi.org/10.26754/ojs_jos/jos.20111/2623)
- Martin, A. J., & Dowson, M. (2009). Interpersonal relationships, motivation, engagement, and achievement: Yields for theory, current issues, and educational practice. *Review of Educational Research*, 79(1), 327–365. <https://doi.org/10.3102/0034654308325583>
- Mayer, G. R., & Butterworth, T. (1995). A preventive approach to school violence and vandalism: An experimental study. *Personnel and Guidance Journal*, 57(9), 436–441.
- McGarr, O., O'Grady, E., & Guilfoyle, L. (2017). Exploring the theory-practice gap in initial teacher education: Moving beyond questions of relevance to issues of power and authority. *Journal of Education for Teaching*, 43, 48–60.
- Mello, Z. R. (2019, April 3). A CONSTRUCT MATURES: TIME PERSPECTIVE'S MULTIDIMENSIONAL, DEVELOPMENTAL, AND MODIFIABLE QUALITIES. *Research in Human Development*, Vol. 16, pp. 93–101. <https://doi.org/10.1080/15427609.2019.1651156>

- Mello, Z. R., Finan, L. J., & Worrell, F. C. (2013). Introducing an instrument to assess time orientation and time relation in adolescents. *Journal of Adolescence*, 36(3), 551–563. <https://doi.org/10.1016/j.adolescence.2013.03.005>
- Mello, Z. R., Zhang, J. W., Barber, S. J., Paoloni, V. C., Howell, R. T., & Worrell, F. C. (2016). Psychometric properties of time attitude scores in young, middle, and older adult samples. *Personality and Individual Differences*, 101, 57–61. <https://doi.org/10.1016/j.paid.2016.05.037>
- Mercer, N. (2019). Language and the Joint Creation of Knowledge. In *Language and the Joint Creation of Knowledge*. <https://doi.org/10.4324/9780429400759>
- Mercer, N. (2013). The Social Brain, Language, and Goal-Directed Collective Thinking: A Social Conception of Cognition and Its Implications for Understanding How We Think, Teach, and Learn. *Educational Psychologist*, 48(3), 148–168. <https://doi.org/10.1080/00461520.2013.804394>
- Miller, R., Latham, B., & Cahill, B. (2016). Humanizing the Education Machine: How to Create Schools That Turn Disengaged ... In John Wiley & Sons. Retrieved from [https://books.google.co.uk/books?hl=en&lr=&id=pLoyDQAAQBAJ&oi=fnd&pg=PR9&dq=state+of+current+schools&ots=8aCun8NCx0&sig=ITJM01SLzN6OTBmkQto31U\\_CDCM&redir\\_esc=y#v=onepage&q&f=false](https://books.google.co.uk/books?hl=en&lr=&id=pLoyDQAAQBAJ&oi=fnd&pg=PR9&dq=state+of+current+schools&ots=8aCun8NCx0&sig=ITJM01SLzN6OTBmkQto31U_CDCM&redir_esc=y#v=onepage&q&f=false)
- Novikov, D. A. (2016). *CYBERNETICS 2*. 0. 16(1), 1–18.
- O’Leary, N., Wattison, N., Edwards, T., & Bryan, K. (2014). Closing the theory–practice gap: Physical education students’ use of jigsaw learning in a secondary school. *European Physical Education Review*, 21, 176–194
- Ofsted. (2014). Below the radar: low-level disruption in the country’s classrooms. Retrieved from [www.nationalarchives.gov.uk/doc/open-government-licence/](http://www.nationalarchives.gov.uk/doc/open-government-licence/),
- Osher, D., Bear, G. G., Sprague, J. R., & Doyle, W. (2010). How can we improve school discipline? *Educational Researcher*, 39(1), 48–58. <https://doi.org/10.3102/0013189X09357618>
- Payne, R. (2015). Using rewards and sanctions in the classroom: pupils’ perceptions of their own responses to current behaviour management strategies. *Educational Review*, 67(4), 483–504. <https://doi.org/10.1080/00131911.2015.1008407>
- Pratten, S. (2017). Trust and the social positioning process. *Cambridge Journal of Economics*, 41(5), 1419–1436. <https://doi.org/10.1093/cje/bex040>
- Riel, M. (2010-2019). Understanding Collaborative Action Research. Center For Collaborative Action Research, Pepperdine University CA, USA (Last revision Mar 2019). Accessed Online on (date) from <http://cadres.pepperdine.edu/ccar/define.html>
- Robertson, F., Barrow, J., Wajrak, M., Nannup, N., Bishop, C., & Nannup, A. (2017). Participatory action and dual lens research. *Qualitative Research Journal*, 17(4), 283–293. <https://doi.org/10.1108/QRJ-12-2016-0075>
- Rogers, B. (2002). *Classroom behaviour : a practical guide to effective teaching, behaviour management and colleague support*. P. Chapman Pub.
- Rogoff, B. (2016, April 1). Culture and participation: A paradigm shift. *Current Opinion in Psychology*, Vol. 8, pp. 182–189. <https://doi.org/10.1016/j.copsy.2015.12.002>
- Rose, N., & Eriksson-Lee, S. (2017). Putting evidence to work: How can we help new teachers use research evidence to inform their teaching? Retrieved from [https://www.teachfirst.org.uk/sites/default/files/TF\\_The\\_Next\\_Move\\_LDP.pdf](https://www.teachfirst.org.uk/sites/default/files/TF_The_Next_Move_LDP.pdf)
- Roth, W. M. (2018). The invisible subject in educational science. *Journal of Curriculum Studies*, 50(3), 315–332. <https://doi.org/10.1080/00220272.2017.1373863>
- Roth, W. M. (2020). Toward an Organic Theory for the Cultural-Historical Sciences. *Integrative Psychological and Behavioral Science*, 1–22. <https://doi.org/10.1007/s12124-019-09510-6>
- Saldaña, J. (2015). *The coding manual for qualitative researchers*. Sage.

- Saunders, M., Lewis, P., & Thornhill, A. (2007). *Research Methods for Business Students*, (6th ed.) London: Pearson.
- Sayer, A. (1992). *Method in Social Science: a Realist Approach* (2nd edition). London, Routledge.
- Shotter, J. (2017). *Speaking Actually: Towards a new 'Fluid' Common-Sense Understanding of Relational Becomings*. Everything is Connected Press.
- Shotter, J. (2009). Bateson, double description, todes, and embodiment: Preparing activities and their relation to abduction. *Journal for the Theory of Social Behaviour*, 39(2), 219–245. <https://doi.org/10.1111/j.1468-5914.2009.00399.x>
- Simon, G., & Chard, A. (2010). Systemic Inquiry: Innovations in Reflexive Research. In *Systems Practice: How to Act in a Climate-Change World*. [https://doi.org/10.1007/978-1-84996-125-7\\_10](https://doi.org/10.1007/978-1-84996-125-7_10)
- Skiba, R. J., Peterson, R. L., & Williams, T. (1997). Office referrals and suspension: Disciplinary intervention in middle schools. *Education and Treatment of Children*, 20, 1–21.
- Slavin, R.E., Lake, C., & Groff, C. (2007). *Effective programs in middle and high school mathematics: a best-evidence synthesis*. Baltimore, MD: Center for Data-Driven Reform in Education, Johns Hopkins University
- Smith, P., O'Donnell, L., Easton, C., Rudd, P., & Research, N. F. for E. (2007). *Secondary Social, Emotional and Behavioural Skills (SEBS) Pilot Evaluation*. Research Report No. DCFS-RR003. In National Foundation for Educational Research. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=ED502435&site=ehost-live>
- Spencer-Brown, G. (1979). *Laws of Form*. E.P. Dutton.
- Stefaniak, J., Reynolds, J. L., & Luo, T. (2019). Improving Classroom Management and Teacher Retention. <https://doi.org/10.4018/978-1-7998-0054-5.ch011>
- Swinson, J. (2010). Working with a secondary school to improve social relationships, pupil behaviour, motivation and learning. *Pastoral Care in Education*, 28(3), 181–194. <https://doi.org/10.1080/02643944.2010.504221>
- Tye, B. B. (1998). The Deep Structure of Schooling: What It Is and How It Works. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 71(6), 332–334. <https://doi.org/10.1080/00098659809599585>
- UNESCO. (2020). Retrieved from <https://en.unesco.org/node/252277>
- Velmans, M. (1999). Intersubjective Science. *Journal of Consciousness Studies*, 6(2–3), 299–306.
- von Bertalanffy, L. (1973). *General system theory : Foundations, development, applications*.
- von Foerster, Heinz, ed. (1995) *Cybernetics of Cybernetics: Or, the Control of Control and the Communication of Communication*. 2nd ed. Minneapolis, MN: Future Systems.
- von Foerster, H. (2003). *Understanding Understanding*. <https://doi.org/10.1007/b97451>
- von Glaserfeld, E. (2001). The Radical Constructivist View of Science. *Foundations of Science*, 6(1/3), 31–43. <https://doi.org/10.1023/A:1011345023932>
- Warfield, J. N. (2004). Linguistic adjustments: Precursors to understanding complexity. *Systems Research and Behavioral Science*, 21(2), 123–145. <https://doi.org/10.1002/sres.601>
- Whitehead, A.N.(1919). *An enquiry concerning the principles of natural knowledge*. Cambridge: Cambridge University Press.
- Wiener, R. (1948). *Cybernetics*. John Wiley & Sons.
- Yeager, D. S. (2017). Social and emotional learning programs for adolescents. *Future of Children*.